REMARKS

Entry of the above amendments and allowance of this application are respectfully requested.

Upon entry of this Amendment, claims 3 to 8 and 11 to 13, as amended, and new independent claim 14 will be pending. Claim 13 is amended to delete the term "linear" which was found objectionable in the Advisory Action.

Claim 14 is added to provide an additional and broader scope of protection than afforded by claim 13 while still distinguishing the present invention from the prior art, including EP 732381 and Lent et al, U.S. Patent No. 5,837,042. In particular, claim 13 recites the reaction product and mole ratio of isocyanate groups to isocyanate reactive groups whereas Claim 14 more broadly defines the water-dissipatible polyurethane by reference to its weight average molecular weight. Claims 13 and 14 each recite that the colorant, e.g., dyestuff, is soluble in the water-immiscible organic solvent.

Claims 3 and 5 to 8 and 11 to 13 were rejected under 35 U.S.C. §103(a) as being unpatentable over EP 732381 (EP 381) alone, or alternatively in view of Lent *et al.* (U.S. Pat. No. 5,837,042) (Lent 042). Claim 4 was rejected under 35 U.S.C. §103(a) as being unpatentable over EP 732381 alone or alternatively, in view of Lent *et al.* as applied above, and further in view of Suzuki *et al.* U.S. 6,153,001 (Suzuki 001).

Applicants respectfully disagree.

In the Advisory Action, the Examiner explained that diisocyanates can react with preformed urethane and biuret linkages such that the resulting polyurethane polymer may be branched and not linear. Applicants do not necessarily disagree with this generalized analysis but Applicants do submit that such reactions do not normally participate in cross-linking reactions. This is presumably the reason why EP '381 requires the presence of polyisocyanates which contain more than two isocyanate groups for cross-linking reactions. Reference to the examples in EP '381 confirms this analysis. For instance, see page 11, lines 45-54 where there is described the polyisocyanates used to prepare microcapsules. These polyisocyanates, designated PI-1 and PI-2, have 16.8% and 21.0%, respectively, isocyanate groups. Please compare to pending claim 13 reciting "at least one diisocyanate."

EP 732381 describes ink jet printing inks (jet inks) based on urethane-based polymer fine particles possessing a cross-linked molecular structure, each containing a colorant, which are insoluble in organic solvents and are able to form a coating film at room termperature

(page 2, lines 50-54; page 3, lines 2 to 3). EP 381 continues to explain that the three-dimensional structure of the colorant-containing fine particles (microcapsules) comprise a gel component ratio of at least 50% (see page 9, lines 4-6). As such, it is clear that the polyurethane component will not have a molecular weight less than 25,000. In this regard, please refer to the enclosed copy of page 113 from "Principle of Polymerization" (previously introduced by the Examiner as an authoritative reference) which explains that gels are "insoluble in all solvents ..." and "corresponds to an infinite network in which polymer molecules have been crosslinked to each other ... ." Such enormous (infinite) molecular weight clearly fails to render obvious a water-dissipatible polyurethane having a weight average molecular weight of less than 25,000.

The disclosure on page 3, lines 56 to page 4, line 8, of EP 381 further describes the insoluble nature of the crosslinked polyurethane, consistent with the above discussion. As described in this paragraph, the colorant is contained within the polyurethane particles (microcapsules) which is insoluble in organic solvents. Therefore, it seems quite evident that the colorant cannot come into contact with any solvent phase in the jet ink composition.

Thus, EP 732381 does not disclose colorant which is soluble in a water-immiscible solvent. In any case, it is clear from the disclosure of EP 732381 that any solvent present in the ink does not come into contact with the polyurethane encapsulated colorant.

For any and all of the above reasons, reconsideration of the rejection of claims 3-8 and 11-13, as well as new claim 14, is respectfully requested.

The deficiencies of EP 381 are not supplied by Lent 042.

As noted above, the polyurethanes of EP 381 have essentially infinite molecular weight. Lent 042 does not provide motivation for changing the essential nature of the polyurethane crosslinked particles of EP 381 by replacing the crosslinked molecules with low molecular weight molecules.

Regarding the additional disclosure of Suzuki 001, as applied to claim 4, it is noted that even if benzyl alcohol were to be included in the ink of EP 732381, this would still not result in the ink compositions of the present invention.

Moreover, to the extent that the aliphatic alcohols and benzyl alcohol contain OH groups which would react with the isocyanates, it would not have been obvious to include such solvents in the compositions of EP 732381. ("Any organic solvent can be used as long as it does [not] react with the polyol (A) containing an ion forming group, polyisocyanate

(B), organic metal catalyst (catalyst promoting urethane formation), and polyamine (C)." – page 9, lines 9-11; exemplified by, e.g., esters, ethers, ketone-type hydrocarbons, and others, page 9, lines 12-16).

Consequently, the rejections in the last Office Action do not present a *prima facie* case of obviousness and the Applicants respectfully request that the rejections be withdrawn.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached Appendix is captioned **"Version with markings to show changes made"**.

CONCLUSION

As all the rejections noted in the Office Action have been addressed, Applicants request reconsideration of the present application and submit that this application is in condition for allowance. A timely Notice to that effect is respectfully requested. Should questions relating to patentability remain, the Examiner is invited to contact the undersigned to discuss the same.

Respectfully submitted,

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APPENDIX: VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

13. (Twice Amended) An ink jet printing ink composition comprising water, water-miscible organic solvent, water-immiscible organic solvent, a colorant which is soluble in the water-immiscible solvent, and a water-dissipatable [**linear**] polyurethane having a weight average molecular weight less than 25,000, which is obtained from the reaction of:

(a) at least one diisocyanate; and

(b) at least one compound having one or two isocyanate reactive groups;

wherein the mole ratio of isocyanate groups to isocyanate-reactive groups is about 1:1.

Claim 14 is added.

Claims 3-8 and 11-12 are also pending.

End of Appendix